REMARKS

Reconsideration of the outstanding rejections and objections is requested in light of the forgoing amendments and the following comments. Claims 1-3, 5 and 8-45 are pending, with claims 1, 26, 39, and 40 being the independent claims. No new matter is added by this Amendment.

Interview Summary

The undersigned would like to express appreciation to Examiner Ganey for his time and attention extended during the interview conducted on October 16, 2006 with Applicant's representative John Mills. The subject matter of independent claims 1, 26, 39 and 40 was discussed during the interview in view of U.S. Pat. Pub. No. 2003/0047624 to Kilgore et al. ("Kilgore"). The Examiner agreed that Kilgore discloses a two-piece body having a separate metallic core and separate valve seat elements. The Examiner indicated that language directed to the relationship between the one piece metallic body and the coil would further distinguish over Kilgore, but that further searching and consideration may be necessary.

Claim Rejections under 35 U.S.C. §103

Claims 1-3, 5, and 8-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kilgore in view of Applicant's alleged admission.

Claims 1, 5, 8, 9 and 17-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kilgore in view of U.S. Patent No. 5,859,376 to Ishibashi et al. ("Ishibashi").

Independent Claim 1 and its Dependent Claims

Independent claim 1 recites "a single piece metallic body that forms part of said metallic core of said solenoid, said body having an impact surface upon which said poppet repeatedly impacts during operation of said injector" and "a portion of said body configured to be engaged by said armature." The Applicant notes that, although in response to the previous office action, the Applicant amended claim 1 to include allowed subject matter, the applicant did not acquiesce

to the rejections. Rather, the amendment to claim 1 was done to further prosecution. Based on the present office action, the Applicant has further amended the claim, as neither Kilgore, nor Ishibashi disclose or suggest a single piece metallic body that forms part of the metallic core and that has a portion configured to engage the armature, as recited in claim 1. Further, the Applicant asserts that none of the cited references from previous office actions disclose or suggest such a configuration for an air assist fuel injector as recited in claim 1.

Kilgore discloses an air assist fuel injector having a separate leg and seat (e.g., an impact surface upon which said poppet repeatedly impacts during operation of said injector). Thus, Kilgore does not disclose or suggest a single piece body that forms part of a metallic core of the solenoid, or that has a portion configured to be engaged by the armature as recited in claim 1. See for example, Figure 15, which illustrates the leg 4166 and the seat 4164. As also described in the present application, a typical prior art fuel injector includes a leg formed with a different material than the seat. This is because the leg is part of the magnetic core through which the magnetic field flows when the solenoid coil is energized to actuate the armature (see par. [006] in the present application). In Kilgore, the leg is part of the magnetic core as illustrated in the figures by its proximity to the armature and solenoid (see for example, Figures 5 and 15) and is therefore, subject to the lines of magnetic flux generated by the solenoid coil. Thus, the leg in Kilgore is formed with a material to provide magnetic properties. In contrast, the seat in Kilgore is formed with a hardened stainless steel having wear and impact resistance properties (see par. [0064]). In addition, the seat in Kilgore does not have a portion configured to be engaged by the armature.

Ishibashi discloses an iron base sintered alloy suitable for the manufacture of valve seats. Ishibashi does not disclose or suggest a single piece metallic body as recited in claim 1. Likewise, in U.S. Patent No. 4,795,097 to Greiner et al. ("Greiner") cited in a previous office action, the valve seat body 17 is not part of the metallic core. For example, Greiner discloses a core well above the valve seat body 17.

Accordingly, at least for this reason, claim 1 is allowable over Kilgore and Ishibashi, either alone or in combination. Based at least on their dependence upon claim 1, claims 2, 3, 5, 8-25, and new claims 41-43 are also allowable.

Independent Claim 26 and its Dependent Claims

Claim 26 recites "a single piece stainless steel body that forms part of said metallic core of said solenoid, said body having an impact surface upon which said poppet repeatedly impacts during operation of said injector" and "an end portion of said body being adjacent said solenoid coil." For similar reasons as stated above for claim 1, none of the cited references disclose or suggest an air assist fuel injector as recited in claim 26. Specifically, Kilgore does not disclose or suggest a single piece body that forms part of the metallic core and that includes an impact surface upon which the poppet impacts and an end portion adjacent the solenoid coil, as recited in claim 26.

Accordingly, at least for this reason, claim 26 is allowable over Kilgore. Based at least on their dependence upon claim 26, claims 27-38 and new claim 44 are also allowable.

Independent Claim 39

Claim 39 recites "a single piece metallic body that forms part of said metallic core of said solenoid, said body having an impact surface upon which said poppet repeatedly impacts during operation of said injector" and "said metallic body having an end portion configured to be engaged by said armature." For the same reasons as stated above for claim 1, Kilgore does not disclose or suggest an air assist fuel injector as recited in claim 39. Accordingly, at least for this reason, claim 39 is allowable.

Independent Claim 40 and its Dependent Claims

Claim 40 recites "a single piece metallic body that forms part of said metallic core of said solenoid, said body having an impact surface upon which said poppet repeatedly impacts during operation of said injector" and "said body having an end portion adjacent said armature." For similar reasons as stated above for claim 1, Kilgore does not disclose or suggest an air assist fuel

injector as recited in claim 40. Specifically, Kilgore does not disclose or suggest a single piece body that forms part of the metallic core and that includes an impact surface upon which the poppet impacts and an end portion adjacent the armature, as recited in claim 40.

Accordingly, at least for this reason, claim 40 is allowable. Based at least on its dependence upon claim 40, new claim 45 is also allowable.

CONCLUSION

All of the stated grounds for rejection have been properly traversed or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner has further questions in connection with this application or believes that further personal communication would be helpful in the prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

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